

What is claimed is:

1. A device capable of producing two mutually perpendicular laser beam planes comprising:
 - at least one laser module irradiating a vertical light beam including:
 - 5 a semiconductor laser and a focusing system; wherein a diffused light beam irradiating from the semiconductor laser is focused by the focusing system to form a light beam;
 - at least one optical deflector utilized to deflect the irradiated light beam, therefrom splitting and forming two perpendicularly related
 - 10 light beams;
 - at least two optical expanders utilized to expand the irradiated light beam to form optical planes.
2. The device capable of producing two mutually perpendicular laser beam planes as claimed in claim 1, wherein the optical deflector may
- 15 be a reflecting optical component.
3. The device capable of producing two mutually perpendicular laser beam planes as claimed in claim 1, wherein the deflector may be configured with a beam splitting film, and utilized as a semi-reflecting, beam splitting optical component.
- 20 4. The device capable of producing two mutually perpendicular laser

beam planes as claimed in claim 1, wherein the deflector may be a prism or a planar optical plate, and set at an angle reciprocally corresponding to a refracting angle requirement.

5 5. The device capable of producing two mutually perpendicular laser beam planes as claimed in claim 4, wherein an optical deviation resulting from thickness of the optical plate may be re-balanced by utilizing another compensating optical plate having corresponding properties to re-equalize the optical deviation and thereby return the light beam to original directional axis, wherefrom the irradiated light
10 beam and an incident light beam are again collinear.

6. The device capable of producing two mutually perpendicular laser beam planes as claimed in claim 1, wherein the deflector is a prism, and a transmission declination resulting from a refracting surface of the prism may be corrected by means of an optical wedge.

15 7. The device capable of producing two mutually perpendicular laser beam planes as claimed in claim 4, wherein the deflector is a prism, and a transmission declination resulting from a refracting surface of the prism may be corrected by means of an optical wedge.

8. The device capable of producing two mutually perpendicular laser
20 beam planes as claimed in claim 1, wherein the optical expander may

be an optical component having a conical reflecting surface.

9. The device capable of producing two mutually perpendicular laser beam planes as claimed in claim 1, wherein the optical expander may be an electric motor-driven, reflecting, optical scanning component.

5 10. A first embodiment of the device capable of producing two mutually perpendicular laser beam planes as claimed in claim 1, wherein the deflector is placed after a first optical expander.

11. The device capable of producing two mutually perpendicular laser beam planes as claimed in claim 1, wherein the optical deflector may
10 be placed before the first optical expander.

12. The device capable of producing two mutually perpendicular laser beam planes comprising the laser module, and at least one optical deflector, and two optical expanders, wherein the second optical expander that expands a perpendicular optical plane may move
15 translationally around a perpendicularly central light beam axis of the laser module.

13. The device capable of producing two mutually perpendicular laser beam planes as claimed in claim 12, wherein the expander may be a reflecting conical body or a reflecting mirror rotating scanner driven by
20 an electric motor.

14. The device capable of producing two mutually perpendicular laser beam planes as claimed in claim 1, wherein the laser module is firmly affixed to an axial rotatable platform having an axis collinear with gravitational pull and perpendicular to two mutually perpendicular optical planes; upon a plumb being in an equilibrium position, a fine laser beam irradiated from the laser module is collinear with gravitational pull, when the plumb deviates from the equilibrium position, gravitation pulls on the plumb, and thereat returns the plumb to the equilibrium position, whereupon the fine laser beam irradiating from the laser module is again collinear with gravitational pull, thus enabling producing one horizontal plane and one perpendicular plane; upon the plumb oscillating, magnetic lines of force of the permanent magnetic body are segmented resulting in a magnetic pulling force that quickly returns the plumb to the equilibrium position.

15. The device capable of producing two mutually perpendicular laser beam planes as claimed in claim 12, wherein the laser module is firmly affixed to an axial rotatable platform having an axis collinear with gravitational pull and perpendicular to two mutually perpendicular optical planes; upon a plumb being in an equilibrium position, a fine laser beam irradiated from the laser module is collinear with

gravitational pull, when the plumb deviates from the equilibrium position, gravitation pulls on the plumb, and thereat returns the plumb to the equilibrium position, whereupon the fine laser beam irradiating from the laser module is again collinear with gravitational pull, thus enabling producing one horizontal plane and one perpendicular plane; upon the plumb oscillating, magnetic lines of force of the permanent magnetic body are segmented resulting in a magnetic pulling force that quickly returns the plumb to the equilibrium position.

16. The device capable of producing two mutually perpendicular laser beam planes as claimed in claim 1, wherein the laser module connects to a copper disk-shaped plumb through a cantilever.

17. The device capable of producing two mutually perpendicular laser beam planes as claimed in claim 12, wherein the laser module connects to a copper disk-shaped plumb through a cantilever.

18. The device capable of producing two mutually perpendicular laser beam planes as claimed in claim 1, wherein a static steel plate is configured directly below the plumb, upon which is affixed at least one permanent magnetic body, and together with the plumb forms a pulling-motion system.

19. The device capable of producing two mutually perpendicular laser

beam planes as claimed in claim 12, wherein a static steel plate is configured directly below the plumb, upon which is affixed at least one permanent magnetic body, and together with the plumb forms a pulling-motion system.

5 20. The device capable of producing two mutually perpendicular laser beam planes as claimed in claim 1, wherein a bubble leveling instrument may be configured on an external surface of a housing, and utilized to provide a horizontal reference surface.

21. The device capable of producing two mutually perpendicular laser
10 beam planes as claimed in claim 1, wherein a reflecting conical surface of a conical optical expander is totally reflecting.

22. The device capable of producing two mutually perpendicular laser beam planes as claimed in claim 12, wherein a reflecting conical surface of a conical optical expander is totally reflecting.

15 23. The device capable of producing two mutually perpendicular laser beam planes as claimed in claim 1, wherein a central position of the conical optical expander may provide functionality for the light beam passing through the conical optical expander to form another light beam, and utilized thereof.

20 24. The device capable of producing two mutually perpendicular laser

beam planes as claimed in claim 12, wherein a central position of the conical optical expander may provide functionality for the light beam passing through the conical optical expander to form another light beam, and utilized thereof.

5 25. The device capable of producing two mutually perpendicular laser beam planes as claimed in claim 1, wherein a reflecting surface configured on the conical optical expander may be adapted as an internal conical surface or an external conical surface.

26. The device capable of producing two mutually perpendicular laser
10 beam planes as claimed in claim 12, wherein a reflecting surface configured on the conical optical expander may be adapted as an internal conical surface or an external conical surface.

27. The device capable of producing two mutually perpendicular laser beam planes as claimed in claim 1, wherein the expander is adapted
15 to having the internal conical surface, and with periphery forming a window thereof.

28. The device capable of producing two mutually perpendicular laser beam planes as claimed in claim 12, wherein the expander is adapted to having the internal conical surface, and with periphery forming a
20 window thereof.